The Institution of Engineers, Malaysia

SPONSORED BY: AVEVA

14th IEM CHEMICAL ENGINEERING DESIGN COMPETITION

Production of Biodegradable Solvents from Agro-Waste Feedstock

For registration and more info, contact CETD Secretariat Ms. Ezzaty at 03-7890 0133 or email at ezzaty@iem.org.my

🎓 ABOUT THE COMPETITION

Since 2012, the IEM Chemical Engineering Design Competition has provided a platform for chemical engineering students to showcase their creativity, technical skills, and innovative solutions to real-world industrial challenges.

This year's challenge focuses on transforming agro-waste into sustainable, biodegradable solvents offering greener alternatives to petroleum-based chemicals.

🎯 OBJECTIVES

- ✅ Enhance design competency and practical application of chemical engineering knowledge.
- ✅ Foster collaboration and knowledge exchange among students, academia, and industry.
- ✅ Promote sustainability and circular economy practices in chemical engineering.

👨‍🔬 ELIGIBILITY

- Open to all diploma and degree-level chemical engineering students from Malaysian and international institutions.
- Teams of 3–5 members from the same institution.
- Mandatory use of AVEVA Process Simulation Software (training provided).

DELIVERABLES

STAGE 1

✓ Progress Report (max 30 pages, excluding Appendix)

- Demonstration of the sustainability concept
- Process flow diagram and equipment selection
- Mass and energy balances

✓ Final Design Report (max 30 pages, excluding Appendix)

- Equipment design (1 major unit operation)
- Process and instrumentation diagram
- Economic performance

STAGE 2 - (if and upon being shortlisted) DESIGN FINALE

✓ Management report (10 pages)
✓ Management report presentation (10 min followed by 15 min Q&A)

Details of deliverables are made available upon registration

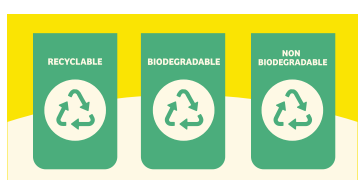
✓ Criteria are subject to change without prior notice.
✓ The number of pages of the progress report and final report exclude appendixes.
✓ Maximum 30 pages for appendixes.
✓ 50% of marks will be deducted for not complying with the requirements stated in the deliverables.

DESIGN COMPETITION

TIMELINES

(subject to change)

- REGISTRATION DEADLINE
  7 NOV 2025
- TRAINING SESSION
  15 NOV 2025
- PROGRESS REPORT DEADLINE
  19 JAN 2026
- FINAL DESIGN REPORT DEADLINE
  23 MAR 2026
- FINALE PRESENTATION
  27 JUNE 2026



PROBLEM STATEMENT

Design a **non-fermentative biorefinery system** to convert lignocellulosic agro-waste (e.g., rice husks, bagasse, wheat straw) into **biodegradable solvents.**

Your solution should:

- Ensure **>95% solvent yield**
- Demonstrate **ROI ≥ 30%**
- Integrate **solvent recovery & recycling loops**
- Align **with ISO, OECD, REACH, ASTM D6400 sustainability standards**

REGISTRATION FEE

- Local Teams: RM350/team (extra RM75 per non-IEM member)
- International Teams: USD130/team

✨ BE PART OF THE GREEN REVOLUTION IN CHEMICAL ENGINEERING DESIGN!
🚀 SHOWCASE YOUR IDEAS. 🌍 SHAPE THE FUTURE. 🌱 BUILD SUSTAINABILITY

The Institution of Engineers, Malaysia

Please email the registration form to ezzaty@iem.org.my

14TH CHEMICAL ENGINEERING DESIGN COMPETITION

REGISTRATION FORM

Name of Institution: _____

Team Leader: _____

Mobile Number: _____

Email Address: _____

Team Members & IEM Membership no:

1._____

2. _____

3. _____

4. _____

5. _____

Name of Advisor: _____

Mobile Number / Contact Number:: _____

Email Address:: _____

I/We understand that the fee is not refundable if i/we withdraw after my/our application is/are accepted by the Organising Committee. However, substitution of participants is allowed. If I/we failed to attend the competition, I/we will still settle the registration fee in full. All payment must be received **before 7 November 2025 (1.00pm).**